HEALTH AND PROSPERITY

In England in the Early Nineteenth Century

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THE subject of this paper has perhaps little direct bearing upon eugenic problems, but it has some indirect relation to them and, further, the sources indicated almost certainly contain material for the investigator upon more direct lines. I suppose that I interpret the eugenic position correctly in stating that it attaches more importance to the heredity of the individual than to his environment, and holds that the chief importance of environment lies in its selective effect upon breeding. The anti-eugenic position, on the other hand, is that the environment of the individual is of paramount importance. No one but a fanatic denies that both heredity and environment count in the well-being of the individual. The question is which is the more important for the individual and the race. The controversy is complicated by the fact that very often a bad environment accompanies a bad heredity, and vice versa. Another difficulty is that it is not possible in the case of human beings to make observations extending over many generations.

Further, the environment of civilized man is very complicated. It consists not only of the natural environment of climate and so on, but also of food, clothing, housing, sanitation, medical and nursing attention, and specialized occupation, not to mention social environment such as charity and Poor Law.

The material and social environment of the peoples of this island and of Western Europe was changed, to an extent which it is almost impossible to exaggerate, by the Industrial Revolution. This term has been much criticized in recent years, as having a too catastrophic implication. If by revolution we mean a change which is complete in a few weeks or months or even in one or two decades, then indeed the term is hopelessly misleading. But if we view the long history of mankind in proper perspective, and realize how economic and social arrangements which had existed for hundreds and, in some cases, thousands of years were superseded in the course of two or three generations, then the term seems not only striking but correct.

In the middle of the eighteenth century the majority of the population of England were rural workers. In the towns the death rate exceeded the birth rate, and the majority of town dwellers were either country-born or the children of country-born parents. In the nineteenth century the urban dwellers rapidly became the majority of the population and, even more significant, a large proportion of the population was town-born. This population lived in different kinds of dwellings from its rural ancestors, ate different food, did different work amid totally different surroundings both material and moral. It is extremely difficult to say, however, what has been the result of these changes upon human physique. Very extreme statements are often made, based upon little more than preconceived opinions. The only thing that can be stated with certainty is that the changes are relatively small compared with the magnitude of the changes in environment. We have to remember, however, that the new environment has existed for only a very short time, and small changes may be very significant for the future.

The period of environmental change may be divided into three. (The actual dates are, of course, somewhat arbitrary.)

1760-1820.—Broadly, a period of falling death rate, and a stationary or slightly rising birth rate. Economically, a period of experiment and change, of the re-organization of agriculture. Politically and socially, a period of war and unrest.

The second period, 1820-1870, is marked by a stationary death rate and (possibly) a slightly fluctuating birth rate, the two rates being such that a large natural increase of population took place throughout the period. The period was one of most rapid change in industry; it saw the coming of the railway age, and in it took place a very rapid growth of towns and the mechanization of a large part of industry. Politically the period was one of consolidation and reform.

The last period, 1870 to 1914, is marked by continued industrialization, a growing dependence upon food and raw materials produced overseas, and by effective improvements in social administration. During this period both the death and birth rates were falling, and the natural increase of population remained large.

The first period has already been worked upon to a considerable extent both by the writer of this article and by others. The last period belongs rather to the statistician and the medical writer than to the historian, and, indeed, the ground has been largely covered by Sir Arthur Newsholme and others. The middle period was one of most rapid change in industry, and yet it was one of stability in birth and death rates. It is the problem of that stability which is engaging my attention at present. This paper is concerned with that part of environmental change which was due to the changing occupations and the effect of that change upon health and upon birth and death rates.

It had, of course, long been known that certain diseases were associated with certain specialized occupations, but interesting as the facts were to medical science and important as they were to individuals, occupational disease was of little national importance since the majority of the people were non-specialized rural workers. With the coming of modern industry, however, large numbers became specialized workers and, since some of the industries were highly localized, occupation tended to become hereditary. The question of occupation and disease is, of course, a wider one than that of unhealthy processes. It includes occupational environment—e.g., factory as opposed to home work, home environment associated with work, e.g., the necessity of living in a large town, and finally the standard of living which the occupational wage makes possible. All these subjects were canvassed during the mid-nineteenth-century controversy over the Factory Acts. (Factories at this period meant textile factories in general, and cotton factories in particular.) During this controversy one school of thought represented the factories as pest houses, and the other extreme as health resorts. These protagonists are too biased for their opinions to be of any value, but from the reports of the early factory inspectors much valuable material may be drawn. One thing is clear from these, that it was impossible to generalize about factory work. There were some unhealthy processes, but these processes had often been equally or more unhealthy when carried on in the worker's home (by hand). Factories themselves could be divided into town and country, and into large and small.

The conditions were totally different in these different classes. There is a considerable amount of evidence that the workers in well-managed rural factories enjoyed good health. The inspectors always vigorously defended the factory owners and the industry against the wholesale charges brought against them, and contended that the conditions were better rather than worse in factory as compared with home industry. Even the evil of long hours was found to the same or greater extent in employments such as tailoring, printing, boot and shoe making, and shop keeping. As to the standard of life of the workers, here again the evidence is very conflicting. Since the textile industries gave work to men, women, and children, earnings were on a family basis, and wage statistics tell us little of the well-being of families. In families with several earners, the standard must have been fairly high. Another difficulty is that the cotton trade then, as now, was subject to alternating periods of boom and depression, and since the industry was highly localized whole families suffered together in bad times. There is also evidence that the country workers were a better type than the

town workers. The cotton towns, especially Manchester, were flooded with low-grade, slum-dwelling Irish labour in the forties.

THE IRISH IMMIGRATION

Contemporary writers on social subjects were agreed that the Irish immigrants were less healthy than the English poor. They invariably lived in conditions of greater overcrowding and dirt, and were subject to constant re-infection from new immigrants with the fever that was rampant in the home country. Generally they entered unskilled employments, and often struggled to send money to members of the family in Ireland, and so were less well fed than the English workers. It was generally believed that their constitutions were less resistant to disease, but whether this was an inborn characteristic or was due to bad environment it is difficult to say. The large Irish immigration into the north of England manufacturing towns was a factor of very great social and racial significance. Mr. Redford, in his book *Labour Migration in England 1800-1850,* deals with the facts very fully; but this migration has never been given due weight in any general history of the time.

Of course, one of the chief difficulties in attempting to gauge the effects of industrialism on physique is that of measurement. At the present time we have available the criteria of height, weight, and so on, but it is not safe to measure the effects of industrialism by comparing the existing rural population with the existing town population. The existing rural population has been subjected to the effects of heavy migrational losses, and industrialism has affected its environment to a considerable extent, particularly in the matter of food. We have also to distinguish between the effects of the early industrialism and of the very different industrialism of the present time. For the former we must rely on contemporary information. To some extent the death rate is a guide, and the fact that the death rate remained stationary during the period of most rapid industrial change, at any rate disproves some of the wilder statements as to the bad effect of industrialism upon health. But while I believe it to be true that big changes in mortality will generally be accompanied by changes in morbidity in the same direction (not by any means necessarily of the same magnitude), it is not always true of small changes: still less will a stationary death rate necessarily mean stationary health conditions. It is, however, an indication in that direction, especially when we remember that the death rate fell considerably in the succeeding period. There are certain other lines of inquiry which the writer is pursuing, but is not yet in a position to say with what result.

We have, of course, the opinions of contemporaries. Most of these are of little scientific value, being in conformity with the general views of the observer as to the good or evil of the industrial system. But in 1831 Thackrah published his well-known book upon the *Effects of the Arts, Trades, and Professions upon Health,* the first English work to attempt to deal fully with the subject of industrial disease. He dealt with over 120 occupations, most of them of the handicraft type. His treatment over such a large field was necessarily somewhat cursory and second-hand, but, nevertheless, the book shows evidence of much keen, sensible, and first-hand observation. Thackrah's book attracted considerable attention—it went into a second edition almost immediately—and it was undoubtedly a great stimulus to the scientific study of the relationship of health and occupation.

Various writers published studies of particular occupations or of the incidence of particular diseases in different occupations. Some of these writers tended to attach too much importance to casual appearance—for instance, the pallid complexion of the town worker—or to statements of the worker himself "that he enjoyed pretty good health." In some cases such statements may have been made under the influence of the fear of dismissal if ill-health were owned to. Another measuring rod used was that of the age composition of the workers in an employment, a large number of old or elderly

workers being held to indicate that the employment was healthy. The investigators sometimes failed to realize that many new occupations would have been unlikely to recruit elderly workers, and that ageing workers would leave the heavy trades, not necessarily to die. Also, age composition is partly a function of the degree of division of labour. In agriculture, where there was little division of labour, there were plenty of jobs suitable to elderly workers, while in many more specialized employments there would be none. But while we criticize some of their methods, we must remember that these early inquirers were breaking new ground; and if their statistics are often of doubtful value, the importance of their general impressions remains. A good number of the results of these special studies will be found in the early numbers of the *Journal of Statistics*.

The fundamental difficulty in dealing with questions of health is, of course, that there is no sharp line between good and bad health. We have to accept the rough-and-ready criterion as to whether the worker is ill enough to be away from work, and obviously the outlook of both the employer and the worker will affect this criterion. But if the worker is entitled to any form of sick benefit a rather more uniform gauge is introduced. It is, of course, by no means a perfect one, but it remains extremely important. By 1850 the Friendly Society movement had attained considerable importance in this country. The movement, however, was much hampered by the constant failure of societies, due mainly to loose actuarial calculation or, in many cases, to the absence of any such calculation at all. It was to aid in remedying this defect that in 1850 the Registrar-General of Friendly Societies, by the direction of the Home Secretary, called for returns from the societies for the preceding five years. The results filled forty folio volumes, 6-7 inches thick. After some discussion as to what was to be done with this mass of material, it was handed to Finlaison, the Actuary to the National Debt Office. After excluding 300,000 doubtful cases, over three and a half million entries remained to be dealt with. Finlaison adopted a card system. The cards were cut into slips and were assembled and re-assembled in special frames according to the observation to be made. The published results showed the different incidence of sickness among Friendly Society members according to residence in small or large towns or the country, according to light occupations or heavy. Some of the more important occupations were also given separately. In all cases figures were given for different age groups.

THE RATE OF SICKNESS

The final calculation showed an average amount of sickness for the whole country of ten days per member per annum, while the average duration of sickness per case was 40.5 days. The mortality was 12 per thousand members. To the surprise of the investigators, the rural districts showed a higher number of sick cases in proportion to membership than the towns, but the sickness was of shorter duration. The returns showed a correlation between length of sickness and mortality, but not between sickness per member and mortality. German figures for about the same period show a similar result.

The theory that death-dealing illness kills off a number of people quickly, leaving healthy survivors, is not borne out by these figures. In some cases death comes slowly; in others, where the victims are killed quickly, the recovery of the survivors is slow. It is also true that the conditions which lead to high death rates are also likely to lead to a large amount of serious sickness. In regard to the inverse proportion of short-duration sickness, the explanation is probably that societies with a low incidence of serious sickness would be likely to be more generous in respect of claims for slight sickness. In regard to the particular case of high incidence of short-duration sickness in the agricultural Friendly Societies, it was pointed out that there was less difference between sick pay and earnings in rural districts than there was in towns. Supervision also is more difficult in rural districts than

in towns; and there is evidence that the rural societies were often under the patronage of the parson and the squire, and there may have been a tendency to save poor relief in periods of slack work at the expense of the societies.

The average duration of sickness was longer in the small towns than in the large, possibly due to less good medical attention. The returns also showed a heavy incidence of sickness in the heavy trades, especially in mining. This was probably due to the inclusion of illness following accidents. There was the same heavy incidence in the special societies catering for railway workers and for the Metropolitan Police. In the former case the explanation as to accidents may apply; the latter is somewhat mysterious, but one reason would doubtless be that the standard of health for active police duty would be very high.

At the time of publication much attention was attracted to the fact that the mortality figures of the Friendly Societies were better than those shown by the Life Insurance Companies which catered for the upper and middle classes. This result appeared to be in direct opposition to some figures published by Chadwick, which showed a very much lower average age at death in poor districts of London than in the well-to-do ones. From this Chadwick argued that the death rate among the poor was very much higher than among the rich. He had, however, failed to allow for the differing age composition of the rich and poor districts, which to a great extent, though by no means entirely, accounted for the difference in age at death. But neither was the comparison between the Friendly Societies and the Life Insurance Companies convincing. The Insurance Companies figures were for *policies* and not for *lives,* and it was very common to effect more than one insurance upon the same life—as many as twenty are recorded; the reason for this being that a life insurance policy was a common security for loans.

In regard to the Friendly Society figures, the membership was so transitory that mortality figures were not very reliable for comparison with the rest of the community. Further, members of Friendly Societies, particularly in towns, were somewhat picked members of their class, the more thrifty and the more temperate. Again, there seems reason to believe that a good part of the excessive mortality of the poor occurred in infancy and early childhood; and infant and child mortality would not, of course, affect the Friendly Society figures, nor, normally, the life insurance ones.

DIFFERENTIAL RATES OF INCREASE

The question of the differential infant mortality rate is closely related to that of the differential rate of increase among different classes. It was generally believed in mid-nineteenth-century England that the birth rate among the well-to-do was considerably lower than among the poor. Certainly, the proportion of children was relatively low in the residential districts of London, but those districts have never been typical: the large proportion of resident servants accounts for a considerable number of the excess of adults. The belief at the time was that town life increased fertility and that the growing urbanization was necessarily leading to a higher birth rate among the working classes. This belief, which was held by Chadwick, was mainly due to a failure to allow for the age composition of the mid-nineteenth-century towns which were growing rapidly by the immigration of young adults of both sexes. As a matter of fact, the *Report of the Registrar-General* for 1840 shows that the greatest proportionate number of marriages of minors was in the purely agricultural counties and the least proportionate number in the Metropolis and the manufacturing districts.

The growing localization of industry must have been some check on marriage. The mining and metal industry districts showed a large excess of males, while the residential and textile districts attracted women and children. The much-discussed cotton industry was the subject of controversy in this, as in every conceivable matter. Some writers held that factory work tended to early marriage, and fecundity and/or im-

morality. Other writers said that the factory worker had fewer children than the wife of the agricultural labourer. Some writers defended the factory worker by pointing to the relatively small number of bastardy orders in manufacturing districts. The detractors of the system replied that this was no proof of morality, since the factory worker either resorted to abortion or supported her illegitimate child from her own earnings without help from the Poor Law.

It is very difficult to extract anything from this welter of conflicting opinion. My own belief, for what it is worth, is that the line between respectability and the reverse tends to be drawn more sharply in towns. It seems likely that in a well-managed factory, for obvious reasons of discipline, women with loose moral records would not have been employed; but this was not necessarily true of all factories. The immoral would tend to be segregated and so to fall to lower depths and to attract attention from the charitable and from reformers. Rescue societies, however, reported that very few of those with whom they had to deal came from the ranks of the factory operatives. Domestic service held the unenviable distinction of supplying the greatest number of the unhappy inmates of rescue homes.

With regard to legitimate birth rates, again we are mainly dealing with mere opinion, not necessarily well-informed. A return as to the vital statistics of a group of spinners and piecers was, however, made for presentation to the Factory Commission of 1832. It was not ready in time for the Commission, and was finally published in the *Journal of the Royal Statistical Society* in 1842. This return was based upon statements made by the operatives and was, of course, subject to a wide margin of error. At the time of the inquiry the average duration of the married life of the married operatives was eleven years, and the average age of the wives at marriage was 21. They had had an average of 4.5 children per marriage, and 40 per cent. of these children were dead. Farr had calculated the fertility of marriage for England and Wales as 4.2 for the ten years ending 1830, but this was very likely an under-estimate.

On the other hand, the marriages of the spinners and piecers were not all completed; there is the possibility therefore of a fertility higher, though not markedly higher, than that for the whole country. This, however, need not be ascribed to increased fecundity due to the conditions of work, but to the simple fact that the opportunities for child employment tended to attract migrants with large or growing families to the textile districts. There is direct evidence that widows with young children migrated to the textile districts to find work for themselves and their offspring. It is possible that some of the children enumerated in the above inquiry may have been step-children. The high mortality among the children will be noted. There is not very likely to have been over-statement here, nor is the figure out of harmony with the known statistics of the time. If the working-class birth rate at this time was slightly higher than that of the upper and middle classes, its effect was probably more than balanced by the high infant and child mortality rates among the children of the workers. I should feel inclined to hazard the opinion that the natural increase of the better-off was at a higher rate at this time than that of the manual workers. Further research may enable me to confirm this opinion or the reverse.

INDICATIONS OF HEALTH

Returning to the question of the effect of industrialism upon health, there is a considerable amount of evidence, which there is not the space to quote here, that factory work was not in itself more unhealthy than other indoor urban occupations. Industrialism, however, led to a rapid urbanization which common sense would lead us to believe must have been an unfavourable factor in national health, especially in view of the then conditions in towns. There must have been some favourable factor which led to the stationary death rate in spite of urbanization and the depressed state of the agricul-

[*Continued on page 196.*]

tural labourer. This factor was probably the increased earning power which the new technique brought to many workers, and the consequent better feeding. At any rate, the output of the workers of industrialized England was generally held to be superior to those of the far less industrialized continent. It is well known that Brassey held the English navvy to be well worth the high wages which he could command. The pessimistic *Report on the Sanitary Condition of the Working Classes,* published in 1842, quotes the fact that English navvys employed on railway construction at Hamburg earned double the wages of the Germans and were worth more to the contractors at double wages. Employers of labour are quoted as saying that it was strength of body combined with strength of will which gave steadiness and value to the artisan and common labourer of England. The majority of these may have been country bred, but an English cotton manufacturer also spoke of English labour being twice as effective as French, and spoke of the " superior persevering energy of the English workman, whose enduring, untiring, savage industry surpasses that of every other manufacturing country I have visited, Belgium, Germany, and Switzerland not excepted." The terms of this tribute may be exaggerated in expression, but the general superiority of the English workman at this period is well attested, and hardly bears out the contention that the race was suffering rapid deterioration.